REMARKS

Claims 1-9 are all the claims pending in the application. Applicants add claims 6-9 to further define the invention as discussed in detail below.

Claims 1 and 5 are rejected under 35 U.S.C. § 102(e) as being anticipated by Hashimoto et al. (6,225,569).

Claims 2 and 3 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hashimoto et al. (6,225,569) in view of newly cited Goodman et al. (5,477,419).

Claim 4 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Hashimoto et al. (6,225,569) in view of Omote et al. (6,198,052).

Analysis

Claims 1 and 5 are the only claims in independent form; therefore, the following discussion is initially directed to these independent claims.

Claim 1 is directed to a circuit board which has a terminal portion with a nickel plating layer and soldering bump, wherein the plating layer thickness is 1.0-4.0μm.

The terminal portion has a base layer, cover layer and conductive layer. This structure provides a high connection strength. In addition, the base layer is polyimide resin. Thus, the circuit board can serve as a suspension substrate.

Hashimoto and Goodman fail to disclose this feature. The base layer is provided with a ceramic material.

In view of the foregoing, claim 1 is patentable because none of the cited references teaches or suggests this layering structure of the present invention.

Claim 5 is patentable for similar reasons to claim 1. Namely, the terminal portion, and its base layer are distinguishable from the cited references. Thus, claim 5 is patentable.

The remaining rejections are directed to the dependent claims 2-4. These claims are patentable for at least the same reasons as claim 1, by virtue of their dependency therefrom.

Finally, Applicants add new claims 6-9 to further define the invention. In particular, these claims further define the various layers, and include the weight proportions of the tin, silver and copper for the soldering bump, as well as the thickness of the base layer of the terminal portion.

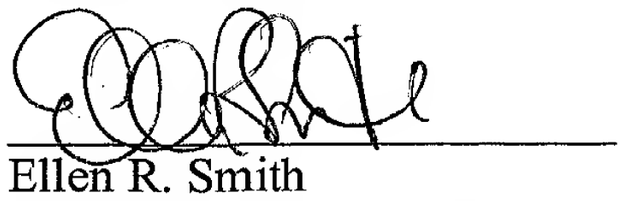
These claims are patentable for at least the same reasons as claim 1, as well as their own recitations contained therein since the cited references fail to teach or suggest these features.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

1. (Twice Amended) A circuit board comprising:

a terminal portion connected with an external terminal formed in an external circuit, said terminal portion provided with a nickel plating layer and a soldering bump;

wherein a thickness of said nickel plating layer is within a range of 1.0 to [2.5] 4.0 μm,

wherein said terminal portion further includes a base layer, and a conductive layer disposed between said base layer and said nickel plating layer, wherein a thickness of said base layer comprises polyimide resin.

5. (Twice Amended) A connection structure for connecting a terminal portion of a circuit board with an external terminal formed in an external circuit, wherein said terminal portion is provided with a nickel plating layer and a soldering bump provided on said terminal portion and a thickness of said nickel plating layer is within a range of 1.0 to [2.5] 4.0 μm, and

wherein said terminal portion is further provided with a base layer and a conductive layer, which is disposed between said base layer and said nickel plating layer, and wherein said base layer comprises poyimide resin.

Claims 6-9 are added as new claims.